

Patent Application of

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for a

HIGHWAY GUARD RAIL SUPPORT MADE FROM TIRES

Background of the Invention

Field of the Invention

The field of invention relates to using planks from recycled or new vehicle tires, bonding them together, and drilling a hole therein, so as to comply with the specific Federal

Highway Administration's (FHA) regulations. More particularly, the invention provides for tire planks that are cut and adhered together (or first adhered together and then cut) to a specific thickness and then a hole, located off center, is drilled therein so as to allow the subject invention to connect a guard rail and guard rail post. The invention is cut to specific dimensions so as to comply with the FHA's regulations.

Description of Prior Art

In construction of almost all highway safety barriers, there is a "block" between the guardrail and vertical supporting posts. These blocks are usually made of wood or metal. Recently, it has become apparent that the wood blocks are susceptible to erosion and the degree of there remaining intact becomes especially apparent after automobile accidents. Additionally, the metal blocks do not have any give or flexibility in the event of an accident.

It has been mandated that all wood blocks be replaced by a much more durable, stronger, flexible and cost effective, reasonable alternative. Toward that end, a few blocks have been made of a synthetic material, such as extruded plastic, but this solution is not cost effective. Furthermore, each new block must go through rigorous tests before a given block is approved by the FHA for use with the national highways. The present invention has gone through all of the FHA's tests and has received the approval from the FHA for

use with the national highways.

In the prior art, tire planks have been used in various ways; however, none of the previous tire plank inventions are like the present invention and the present invention is unobvious to one skilled in this art.

One use of tire planks has been in the highway barrier area, but not as provided in the subject invention. For example, U.S. Pat. No. 5,360,286 to Russell depicts a highway traffic barrier made from tires. U. S. Pat. No. 5,412,921 to Tripp describes an I-beam structure made from vehicle belts. A post pole or beam made of recycled or used tires is depicted in U.S. Pat. No. 5,246,754 to Miller.

Other patents in this area describe methods for bonding tire planks together. One unique method for bonding plank tires together is described in U.S. Pat. No. 6,527,891 to Khadem. U.S. Pat. No. 5,096,772 to Snyder and U.S. Pat. No. 5,340,630 to Tripp employ methods used to bond vehicle tire planks together.

However, a review of the prior art depicts differences from the subject invention. The present invention combines tire planks (either used or recycled or new) together (to a specific thickness), by using a bonding method (as, for example, U.S. Pat. No. 6,527,891), and then, the preferred method is to cut the block into a specific size and then drill a hole of a specific diameter so that the resulting product is the present invention which adheres to the FHA's regulations. This invention is different than the prior art and thus is novel than

what has been done before and is also unobvious to one skilled in the art because of such uniqueness and the potential wide use and commercial success of this product.

The present invention presents a more reliable product than previous products and is more economically advantageous than the prior inventions in this particular field.

Summary of the Invention

The purpose of the invention, then, is to provide a rubberized connector block made of recycled or new tires made specifically according to FHA's regulations so as to connect a guardrail and guardrail post.

A brief summary of the invention follows. The invention comprises a block made of planks of new or scrap automobile tires. The planks could be cut and adhered together or first adhered together and then cut. Adhering and bonding can be accomplished through a number of processes but the preferred method is to use the process described in U.S. Pat. No. 6,527,891. Depending on the thickness of the planks, the block is made of 12 to 16 cut planks each measuring approximately 14 inches long by 6 inches wide and a thickness of 0.5 inches, which are adhered together as described in the aforementioned U.S. Patent. One or more holes are then drilled through each block, either before or after such planks are adhered together to make the invention. The planks' thickness and block thickness and hole or holes are made in accordance with FHA's regulations. The most common requirement is one hole located, off centered as is described later in this application.

The result is that the block is made of new or scrap automobile tires. The resulting dimensions (once the planks are adhered together) of the resultant block is $.14'' \pm 1''$ long by $6'' \pm 1''$ wide and by $6'' \pm 1''$ thick. Based on the specific FHA's requirements, one or more holes and/or slots may be drilled through the "block" thickness. The most common form is one $0.75'' \pm 1/32''$ diameter off-centered hole, with its center located in the middle of the cross-section length and $1.5'' \pm 1/8''$ from one of its cross-section width. When required by the Federal Highway Administration, additional plank strips will be added to the thickness of the block on both front edges. The block should meet the minimum requirements of the test approved by Federal Highway Administration for the "block" to be used in national highways.

The invention resides not in any one of these features per se, but rather in the particular combination of all of them herein disclosed and claimed, and it is distinguished from the prior art in this particular combination of all its structures for the functions specified.

There has thus been outlined, rather broadly, the important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto. Those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for

designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

Further, the purpose of the foregoing abstract is to enable the U.S. Patent and Trademark Office and the public generally, and especially the scientists, engineers and practitioners in the art who are familiar with patent or legal terms or phraseology, to determine quickly from a cursory inspection the nature and essence of the technical disclosure of the application. The abstract is neither intended to define the invention of the application, which is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

One objective of this invention, then, is to be durable through the weather elements the invention encounters.

A further objective of the invention is to provide an easy means to make it and build the invention so that it is economical to manufacture.

Yet another objective of the invention is to comply with FHA's rules and regulations both in dimensions, application, and testing.

Another objective of the invention is to provide a flexible and energy absorbing product(as opposed to wood or metal) in the event of an auto accident.

Another objective of the invention is to allow for a means to recycle tires for use in a specific cost effective, usable method.

Brief Description of the Drawings

The invention will be better understood based on the following detailed description. Such description makes reference to the annexed drawings wherein:

FIG. 1 shows a perspective view of the invention.

FIG. 2 shows a perspective view of an uncut single plank 8.

FIG. 3 shows a perspective view of two planks bonded together 9.

FIG. 4 shows a view of two planks 8 bonded together 9 and depicts the cuts to be made 14.

FIG. 5 shows a perspective view of the block, after the cuts and prior to drilling.

FIG. 6 shows a perspective view of one plank and depicts the cut to be made.

FIG. 7 shows a perspective view of more than two planks bonded together and depicts the cuts to be made.

Description of the Preferred Embodiment

With reference now to the drawings, and in particular **FIGS. 1, 2, 3, 4, 5, 6, and 7** the subject invention that embodies the principles and concepts of the present invention.

With respect to **FIG 1.**, it depicts a block **10** made of cut planks **13** of new or scrap automobile tires. In the preferred method, planks **13** are cut and adhered together. Adhering and bonding can be accomplished through many processes. A preferred process is to use the process described in U.S. Pat. No. 6,527,891. However, cold adhesion can also be employed in the adhesion and bonding process. Depending on the thickness of the individual plank **13**, the block **10** usually comprises 12 to 16 cut planks **13** each plank **13** measuring approximately fourteen inches (14") long **A** by six inches (6") wide **B** and a half inch (0.5") thick **I** (shown in **FIG. 6**). Once the individual planks **13** are bonded together (using the method as previously mentioned), the block **10** is approximately six inches (6") thick **C**. A hole **11** is then drilled, based on the specific FHA's regulations, through the block's **10** thickness at a diameter of $0.75'' \pm 1/32''$, which is off-centered. The center of the hole **11** is located in the middle of the cross-section height **D** and a distance of $1.5'' \pm 1/8''$ **E** from one side of the cross section width **B**. The block **10** is made according to Federal Highway Administration's (FHA) requirements, so in some cases, one or more holes and/or slots may be drilled through the block's **10** thickness (either before or after the planks **13** are adhered together to make the block **10**, but the preferred method is to drill the hole **11** after the planks **13** have been bonded together, as previously described).

When required by the Federal Highway Administration, two plank strips **12** which measure the same length **A** as the other planks **13** but each at 0.4" thickness **F** and depth **G**,

respectively, will be added to the thickness **C** of the block **10** on both front edges of the block **10** as shown in **FIG. 1**.

The block **10** is made to meet the minimum requirements of the tests approved by the Federal Highway Administration for use in the national highways.

In **FIG. 2**, a single uncut plank **8** is shown. The plank's length **H** is not cut to its approximately fourteen inches (14") length **A** (**A** not shown in **FIG. 2**). The width of the plank **8** is six inches (6") **B** and it is a half inch (0.5") thick **I**.

In **FIG. 3**, two planks **8** are bonded together **9** using the bonding method according to U.S. Pat. No. 6,527,891. The width of the two planks bonded together **9** is about one inch (1") **J**. The planks' length **H** is not cut to its approximately fourteen inches (14") length **A** (**A** not shown in **FIG. 3**). The width of the plank **8** is six inches (6") **B**.

FIG. 4 shows a perspective view of two planks **8** bonded together **9** and depicts the cuts to be made **14** so that the length **A** is about fourteen inches (14").

In **FIG. 5**, multiple planks **13** are bonded together **14** using the bonding method according to U.S. Pat. No. 6,527,891. The width of the multiple planks **14** bonded together is about six inches (6") **B**. The planks' length **A** is approximately fourteen inches (14"). The total block's thickness is approximately six inches (6") thick **C**.

FIG. 6 shows a perspective view of one uncut plank **8** and depicts the cut to be made to make cut planks **13**.

In **FIG. 7**, multiple planks **8** are bonded together **9** using the bonding method according to U.S. Pat. No. 6,527,891 or cold adhesion. The width of the multiple planks bonded together is about six inches (6') **B**. The planks' length **A** is cut to its approximately fourteen inches (14"). The total block's thickness is approximately six inches (6") thick **C**.

A hole **11**, as depicted in **FIG. 1**, must be drilled. The hole may be drilled in the block after it is made or in the individual planks. The planks may be adhere together face-to-face, back-to-back, face-to-back, or any other like combinations.

Regardless of how the block is ultimately made (either planks cut, bonded and a hole drilled in the block or hole drilled in each plank, the planks bonded together and the result is the invention), it has the following characteristics:

1. It is made of new or scrap automobile tires.
2. Its final dimensions are **A** (14"±1") long by **B** (6"±1") wide and by **C** (6"±1") thick as depicted in **FIG. 1**.
3. Based on the specific FHA's requirements, one or more holes and/or slots may be drilled through the block's thickness. The most common form is a hole **11** drilled, based on the specific FHA's regulations, through the block's **10** thickness at a diameter of 0.75"±1/32". The center of the hole **11** is located in the middle of the cross-section height **D** and a distance of

1.5"±1/8" E from one side of the cross section width B, which is off-centered as in depicted FIG. 1

4. When required by the Federal Highway Administration, two plank strips 12 which measure the same length A as the other planks 13 but each at 0.4" thickness F and depth G, respectively, will be added to the thickness of the block 10 on both front edges of the block 10 as shown in FIG. 1.

5. The invention is made to meet the minimum requirements of the tests approved by the Federal Highway Administration for use in the national highways.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the invention to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those skilled in the art, and all equivalent relationships to those illustrated in the drawing and described in the specification are intended to be encompassed by the present invention.

Thus, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to,

falling within the scope of the invention.